

Appl. No. 10/695,630
Amdt. dated March 15, 2006
Reply to Office action of December 15, 2005

In The Claims:

Claims 1-74 (canceled)

- 5 75. (currently amended) A multi-chip structure comprising:
a first chip comprising a pad comprising a copper layer and a nickel layer over said
copper layer;
a second chip; and
a tin-containing material connecting said pad to said second chip.

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Claims 76-77 (canceled)

78. (currently amended) The structure of Claim 75, wherein said pad further
comprises a gold layer over said nickel layer.

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79. (currently amended) The structure of Claim 75, wherein said tin-containing
bump further comprises copper.

80. (currently amended) The structure of Claim 75 further comprising a wire
20 wirebonded to said first chip.

81. (previously presented) The structure of Claim 75, wherein said tin-containing
material further comprises lead.

25 82. (previously presented) The structure of Claim 75, wherein said tin-containing
material further comprises silver.

83. (currently amended) A multi-chip structure, comprising:

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a first chip comprising:

a semiconductor substrate comprising multiple MOS devices,

a metallization structure over said semiconductor substrate,

5 a passivation layer over said metallization structure, an opening in said passivation layer exposing a top surface of a first pad of said metallization structure, and

a second pad connected to said top surface of said first pad, wherein said second pad comprising a copper layer and a nickel layer over said copper layer;

a second chip over said first chip; and

10 a tin-containing material connecting said second pad to said second chip.

Claims 84-85 (canceled)

86. (currently amended) The structure of Claim 83, wherein said second pad further
15 comprises a gold layer over said nickel layer.

87. (currently amended) The structure of Claim 83, wherein said tin-containing material further comprises copper.

20 88. (currently amended) The structure of Claim 83, wherein said second pad further comprises a gold layer under said copper layer, wherein said gold layer has a thickness of greater than 1 micron.

89. (previously presented) The structure of Claim 83, wherein said second pad
25 comprises an electroplated metal.

Claims 90 (canceled)

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91. (currently amended) The structure of Claim 83 further comprising a wire wirebonded to said first chip.

92. (previously presented) The structure of Claim 83, wherein said tin-containing material further comprises lead.

93. (previously presented) The structure of Claim 83, wherein said tin-containing material further comprises silver.

10 94. (currently amended) A multi-chip structure, comprising:
a first chip comprising:
a semiconductor substrate comprising multiple MOS devices,
a metallization structure over said semiconductor substrate,
a passivation layer over said metallization structure, an opening in said
15 passivation layer exposing a first pad of said metallization structure,
a trace over said passivation layer, and
a second pad connected to said first pad through said trace, wherein said
second pad comprises a copper layer and a nickel layer over said copper layer;
a second chip over said first chip; and
20 a tin-containing material connecting said second pad to said second chip.

Claims 95-96 (canceled)

25 97. (currently amended) The structure of Claim 94, wherein said second pad further comprises a gold layer over said nickel layer.

98. (currently amended) The structure of Claim 94, wherein said tin-containing material further comprises copper.

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99. (currently amended) The structure of Claim 94, wherein said tin-containing material further comprises lead.

5 100. (currently amended) The structure of Claim 94, wherein said tin-containing material further comprises silver.

101. (currently amended) The structure of Claim 94 further comprising a wire wirebonded to said first chip.

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102. (new) The structure of Claim 75, wherein said tin-containing material covers a top surface and a sidewall of said pad.

103. (new) The structure of Claim 83, wherein said tin-containing material covers a
15 top surface and a sidewall of said second pad.

104. (new) The structure of Claim 83, wherein said passivation layer comprises nitride.

20 105. (new) The structure of Claim 94, wherein said tin-containing material covers a top surface and a sidewall of said second pad.

106. (new) The structure of Claim 94, wherein said trace comprises a gold layer having a thickness of greater than 1 micron.

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107. (new) The structure of Claim 94, wherein said passivation layer comprises nitride.